# THE USE OF MENTHOL THROUGH THE STOMACH-TUBE.

BY

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In bringing forward a new suggestion as to treatment, it must be borne in mind that it is seldom that marked originality is possible. The patent-medicine man, even if his remedy has some novel virtue, ignores his obligation to the general fund of knowledge to which he is a debtor. The writer prefers to regard this communication as a bit of granulation-tissue budding out from structures whose elements have been established by use and experience, and deriving its nurture from the current of medical thought which is kept in constant circulation.

The writer first used menthol through the stomach-tube in the fall of 1891.

Case I.—The patient was a middle-aged man without discoverable organic disease, but suffering from atonic dyspepsia and lithæmia, which is in one sense atonic dyspepsia of the liver. The patient, in addition to the dyspepsia, was subject to occasional attacks of mild subacute gastric catarrh, which was relieved by lavage with a rather hot alkaline solution. At one of the sittings the attempt was made to introduce a menthol spray through the stomach-tube, but the attempt was not very satisfactory, and it was quite impossible to tell whether the improvement which followed was due in any degree to the menthol. At a later sitting, the menthol-spray was introduced, tasted by the patient, and was followed by immediate relief.

Case II.—The second case was that of a delicate young married woman, not yet fully recuperated from the fatigue of bearing and nursing a child. The patient was somewhat anæmic, but the writer was called more particularly to relieve an atonic dyspepsia, with loss of appetite and occasional vomiting. So little digestive power was there that at the first passage of the stomach-tube a breakfast of milk and hominy was found almost unchanged, although it had been taken three hours before. The lavage at the first sitting was not very satisfactory. The patient was placed upon a mixture containing hydrochloric acid, to be taken one hour after each meal. About two weeks later lavage was again practised, and this time successfully, as the stomach had been properly prepared by fasting. After cleansing the stomach and removing the water, which brought away very little mucus, a two-per-cent. oily solution of menthol was sprayed through the tube. After a minute or two the patient spoke of a peculiar taste in the mouth, which she at first compared to cinnamon, but afterwards recognized as that of peppermint. Although the passage of the tube caused some discomfort, the patient expressed herself as much pleased with the relief immediately following the treatment. The hydrochloric acid mixture was continued for a few days, but the patient's recovery was so rapid that there was no further indication nor even excuse for repeating lavage. During the six months following the treatment there has been no return of the dyspepsia. The writer believes so strongly in the beneficial action of hydrochloric acid to supplement a weak digestive power that he is not inclined to over-estimate the importance of the

lavage, which in this case was mainly diagnostic, nor of the menthol application. Yet in the judgment of the patient and attending physician, some of the credit was due to the use of menthol.

CASE III.—The third patient was a woman, aged forty years, whose dyspepsia was accompanied by mild gastric catarrh. At the first use of the stomach-tube a great deal of syrupy mucus was removed, which evidently had been swallowed and partially dissolved within the stomach. This mucus was from the pharynx, trachea, and bronchial tubes. It was accompanied by a smaller quantity of denser mucus from the stomach itself. A week later, the respiratory catarrh having subsided, very little mucus was found in the stomach. Lavage in this patient's case was followed by the administration of the menthol spray. Other treatment was for the most part hygienic, and the patient's symptoms were so marked and the relief so speedy that it seems fair to ascribe the improvement largely to the use of menthol.

CASE IV.—The fourth patient was a single woman, aged thirty-nine, who came to the dispensary on account of enlarged lymph-nodes. Syphilis was suspected, mainly because the patient lived on Canal Street, but the diagnosis was not confirmed. The bowels were regular, there was complaint of vomiting and retching, lack of appetite, and, in general, the history of moderate dyspepsia, partly atonic, partly catarrhal. After five days' treatment with dilute hydrochloric acid, twenty-five centigrams one hour after each meal, without improvement, lavage was practised. The œsophagus was unusually large, and both the water and mucus were vomited around the tube. Little mucus was removed through the tube. About three pints of tepid water were used, and a five-per-cent. solution of menthol in liquid cosmoline was then introduced and soon tasted by the patient. Immediate relief was experienced, which can scarcely be attributed to mental effect, for the insertion of the tube caused great discomfort, and the patient was disposed to regard mechanical treatment unfavorably. In the nine days following, she twice reported improvement. The causes of the dyspepsia were beer and tea drinking, improper diet, and a life of exposure. Of these only the beer and tea habits were removed.

CASE V. was that of a married woman, aged forty, fleshy and apparently healthy, but constantly tired by worry and overwork. For four months she had suffered from regurgitation of food, severe gastric pain and heart-burn at intervals. On percussion the stomach was found distended with gas, the area of resonance being nine and a half by four and a half inches, reaching from a point one inch to the right of and two inches above the umbilicus, downward in a curved line to the umbilicus, and thence almost horizontally four inches to the left, thence curving again upward to a point at the intersection of the tenth rib and the anterior axillary line. Lavage brought away pieces of bread and milk-curds, the remains of a breakfast taken eight hours previously. The menthol spray was introduced as already described. About two months afterwards the patient reported considerable permanent improvement, although she had neglected treatment and had relapsed somewhat from the condition immediately following the lavage and menthol application.

CASE VI. was that of a married woman, aged forty-five, who had been sick for a year, vomiting sometimes two or three times a day, sometimes not for a week, the vomited matter containing bile but not mucus. Diarrhœa and constipation had alternated. After spraying the throat with a cocaine solution, the tube was introduced four hours after a meal, consisting of bread and tea. A little mucus, some bile, and soaked bread were removed. In spite of the cocaine, the patient suffered the usual amount of discomfort from the passage of the tube, and its presence in the stomach caused considerable retching. On account of the irritability of the stomach, an attempt to supplement the ordinary siphonage by suction from a hard rubber syringe, whose nozzle was inserted into the outer end of the stomach-tube, proved a failure, the stomach-wall closing upon the internal lumina of the tube. After stripping the tube as dry as possible, menthol and tincture of benzoin in liquid terraline were intro-

duced in the usual manner, tasted by the patient and smelled in her breath. The menthol vapor produced immediate relief of the gastric irritability, comparable to that which usually follows the filling of the stomach with warm water, but more complete, since the retching in her case did not cease till after the lavage was finished. The patient reported three times in the following week, much improved as far as the dyspepsia was concerned, but feeling too weak to have the tube passed again. As this weakness had been a prominent symptom for a year, it cannot be ascribed to the local treatment of the stomach. The patient was given a nux vomica tonic before meals and hydrochloric acid one hour after eating. Three weeks later the patient considered herself well of the dyspepsia and complained only of a "pain in the kidneys," which was relieved by a liniment.

CASE VII.—The seventh patient was a man, aged forty-six, who had indulged extensively in liquor and tobacco, smoking sometimes fifteen pipefuls daily. He ascribed the beginning of his stomach-trouble a year ago to the drinking of ice-water. The stomach was not dilated and little mucus was removed by lavage. After the stomach had been filled with and emptied of the menthol vapor several times, through the inadvertence of an assistant the tube was allowed to slip in three or four inches farther than the twenty-two inch mark. This was noticed while the vapor was issuing from the tube. On pulling out the tube, the internal end must have reached the lowest part of the stomach, for a considerable quantity of bile-stained water passed from the tube and then the menthol vapor again appeared, showing indisputably that the stomach had been thoroughly filled with the vapor.

The notes of Cases VIII. and IX. have unfortunately been lost, but they agree in substance with the reports already given.

The first suggestion as to the possibility of transmitting a menthol spray through the stomach-tube arose from the presence of a dirty tube when the writer was inhaling and exhaling the vapor from an ordinary hand atomizer. The sight of the cloud issuing from the nostril naturally suggested the possibility of disinfecting the stomach-tube in a similar way. The result of this experiment was satisfactory. The vapor introduced at the funnel of the tube passed through its entire length of five feet and issued from both the gastric orifices in full volume. The passage of the spray through the tube for a minute or two removed entirely the sour smell, and after forty-eight hours the odor of menthol was still very perceptible and the disinfection was apparently complete. Knowing from personal experience the beneficial action of menthol in the upper air-passages, and knowing, too, the possibility of transmitting a menthol spray through the stomach-tube, the natural sequence was the desire to test its value in affections of the gastric mucous membrane.

The value of menthol is not a mysterious one. Like the active principles of most of the volatile oils, it is anæsthetic and antiseptic. Its anæsthetic action is preceded by a slight irritation, in which occurs a local dilatation of the arterioles and, consequently, an increased blood-supply and a sense of burning.

The question might be asked, Why not introduce the menthol by allowing the patient to swallow a solution or mixture containing it? Peppermint-water, the spirits of peppermint, and a combination of menthol, salol,

and bismuth subcarbonate, are favorite prescriptions of the writer in various painful conditions of the stomach and intestine, especially when fermentation is present. In these conditions, however, the object is not so much a systematic application of the remedy to the entire surface of the gastric mucous membrane as a relief of pain and a prevention of fermentation in the stomach.

By first cleansing the stomach of particles of food and shreds of mucus by means of lavage, the stomach is put in a proper condition for thorough local medication. Were menthol readily soluble in water and if the stomach could be distended to its utmost capacity by water without danger, or at least inconvenience from the mere weight of the fluid, and were it desirable to have a dissolving fluid in immediate contact with the glandular apparatus during the stimulation caused by the presence of the menthol, then it would be perfectly feasible and sufficient to introduce the drug either by a continuation of the lavage or by having a solution of the drug swallowed. Menthol, however, is not readily soluble in water, but can be dissolved to more than the necessary strength in liquid petrolatum and in any of the corresponding proprietary preparations, such as cosmoline, terraline, and albolene. The writer believes that it is a common experience that the stomach will not readily tolerate the presence of more than fifteen hundred or two thousand cubic centimetres of water, although anatomists place the capacity of the stomach at a higher figure. If, after introducing as much water as the stomach will readily tolerate, the funnel of the tube is lowered so as to obtain the level of the fluid within, it will be readily seen that the high-water mark is an inch or more below the cardiac orifice. Percussion also verifies the conclusion that the stomach cannot ordinarily tolerate the weight of enough water to produce a maximum distention. A watery solution, therefore, could not be applied thoroughly and equally to all parts of the stomach without changing the position of the patient to an uncomfortable and impractical, if not actually dangerous, extent. It is advisable also that the rubefacient action of the menthol should be more marked than could be possible if the mucous membrane were freely bathed with a watery fluid, which by an osmotic interchange would abstract the saline contents and the secretions of the epithelial cells while the cells themselves would tend to become macerated.

The finely-divided spray of an oily solution of menthol distends the stomach symmetrically with little tendency to gravitate to the greater curvature and without straining the ligamentous and peritoneal attachments of the stomach. The vapor diffuses itself in all directions, touches almost every cell of the mucous membrane with a tiny oil globule holding in solution a small amount of menthol. In the aggregate, the clean surface of the stomach is coated with a medicated film of inert mineral oil. This film forms an antiseptic dressing for the mucous membrane, has little if any irritant action aside from the excitation of the menthol, and is, for the most part, brushed off by the first food which enters the stomach. The

action of the menthol must be almost entirely local, for the oily solution, though strong enough to act on the mucous membrane, is not used in sufficient volume to make the constitutional action of menthol noticeable.

The technique of the administration of menthol through the stomach-tube is simple. The patient should be directed to take no food within at least four hours of the time of appointment and the last meal should be a light one. Lavage is practised in the ordinary way, using plain water or a weak alkaline solution of about the body temperature and repeating the washing until the fluid returns free from shreds of mucus. The water is removed from the stomach by siphonage as completely as possible, stripping and shaking the tube to remove the water remaining in it. The contact of the tube with the walls of the stomach is apt to excite retching. Haste should be made, therefore, to distend the organ with the spray from the atomizer. The writer uses a one- to five-per-cent. solution in any of the colorless substitutes for the crude officinal liquid petrolatum. The form of the atomizer is a matter of indifference, as almost any of the cheap nickel-tube perfume atomizers will spray an oily solution. The spray is then directed into the funnel, a piece of card-board being used to prevent a rebound of the vapor from the sides of the funnel, or the funnel may be removed and the tip of the atomizer introduced into the lumen of the tube. For a minute or two the vapor from the atomizer will meet with some resistance from the small amount of water remaining in the tube, and on auscultation a bubbling may, at times, be heard in the stomach. The vapor, like the fluid previously used, should have an alternate ingress and egress. By pinching the tube close around the tip of the atomizer the stomach may be fully distended and it should then be allowed to contract upon its gaseous contents, when the vapor and even drops of water will be expelled with considerable force from the mouth of the tube. No better proof of the fact of the entrance of the spray into the stomach can be afforded than the almost invariable statement of the patient that the peppermint can be tasted in the mouth, which it can reach only by regurgitation through the œsophagus outside the stomach-tube or through the blood circulation. After having forced the vapor into the stomach and having allowed the stomach to contract upon its gaseous contents six or seven times, it is safe to assume that the walls of the organ have become as thoroughly coated as would the pharynx or the nose after the same number of applications, barring the fact that the vapor has to follow a longer course and that the surface to be medicated is of much greater area.

The value of the menthol spray has been so thoroughly demonstrated in the treatment of more accessible mucous membranes that it seems pardonable to report this new use of it without waiting for a longer series of cases or a greater lapse of time to speak more emphatically in favor of its local action on the stomach. The nine cases reported (and several others not mentioned in this paper) seem to show that the use of the menthol spray in cases of atony or catarrh of the stomach is followed by at least

temporary benefit. More than this is not to be expected, for there are few diseases which, if cured, may not return, and almost no therapeutic measures short of the knife and saw whose direct action is permanent. In fact, it is by the aid of temporary helps to tide over crises that permanent health is restored in the great majority of ailments.

Not only menthol, but a number of other substances at present used, mainly by laryngologists, will probably be found useful in certain cases, when applied to the stomach by the atomizer, through the tube. Silver nitrate is at present nearly useless in gastric ulcer and catarrh, for if an attempt is made to introduce it into the stomach in solution, most of its efficacy is wasted on the mouth, pharynx, and œsophagus; if given in pill, there is the danger of its acting too vigorously on one part of the stomach-wall and there is scarcely a possibility of its acting uniformly on even the lower portion of the gastric mucous membrane. Unfortunately, silver nitrate is not soluble in liquid petrolatum, but a watery solution may be sprayed into the stomach with the certainty that it will not act on mucous membrane till it reaches its destination and with the reasonable expectation that it will be quite evenly diffused inside the stomach.

In conclusion, the writer would guard against conveying the impression that he is very enthusiastic over the use of the menthol spray in diseases of the stomach. Of all therapeutic substances which can be introduced through the stomach-tube, probably the most useful is plain hot water, and yet the practice of lavage has been carried by some to a ridiculous extreme. The cases in which the tube is to be inserted and the menthol or other spray introduced must be carefully selected, after an estimation of the patient's endurance and when simpler means of treatment have been tried and found wanting, or when there is no probability of their meeting fully the particular indications existing in the case under consideration.

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